

FILE 'HOME' ENTERED AT 18:53:07 ON 24 JUL 2009

=> file hcaplus
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FULL ESTIMATED COST

FILE 'HCAPLUS' ENTERED AT 18:54:04 ON 24 JUL 2009
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FILE COVERS 1907 - 24 Jul 2009 VOL 151 ISS 5
FILE LAST UPDATED: 23 Jul 2009 (20090723/ED)
REVISED CLASS FIELDS (/NCL) LAST RELOADED: Jun 2009
USPTO MANUAL OF CLASSIFICATIONS THESAURUS ISSUE DATE: Jun 2009

HCAPLUS now includes complete International Patent Classification (IPC) reclassification data for the second quarter of 2009.

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<http://www.cas.org/legal/infopolicy.html>

This file contains CAS Registry Numbers for easy and accurate substance identification.

The ALL, BIB, MAX, and STD display formats in the CA/CAPLUS family of databases will soon be updated to include new citing references information. This enhancement may impact record import into database management software. For additional information, refer to NEWS 22.

```
=> s (titanium(3A)(alkoxide or isopropoxide))
      581807 TITANIUM
      22088 ALKOXIDE
      11722 ISOPROPOXIDE
L1      6873 (TITANIUM(3A)(ALKOXIDE OR ISOPROPOXIDE))
```

```
=> s L1 (P) (water or aqueous)
      2921046 WATER
      212551 AQUEOUS
      1160142 AQ
      1214591 AQUEOUS
              (AQUEOUS OR AQ)
L2      669 L1 (P) (WATER OR AQUEOUS)
```

```
=> s L2 (P) (stable or stabil?)
      757519 STABLE
      1260892 STABIL?
```

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L3          93 L2 (P) (STABLE OR STABIL?)

=> s L3 (P) (acac or (acetyl(2A)aceton?) or diketone or (beta(3A)diketone))
    9081 ACAC
    176931 ACETYL
    312136 ACETON?
    15015 DIKETONE
    1624746 BETA
    15015 DIKETONE
L4          3 L3 (P) (ACAC OR (ACETYL(2A)ACETON?) OR DIKETONE OR (BETA(3A)DIKE
    TONE))

=> dup rem L4
PROCESSING COMPLETED FOR L4
L5          3 DUP REM L4 (0 DUPLICATES REMOVED)

=> d his

(FILE 'HOME' ENTERED AT 18:53:07 ON 24 JUL 2009)

FILE 'HCAPLUS' ENTERED AT 18:54:04 ON 24 JUL 2009
L1          6873 S (TITANIUM(3A) (ALKOXIDE OR ISOPROPOXIDE))
L2          669 S L1 (P) (WATER OR AQUEOUS)
L3          93 S L2 (P) (STABLE OR STABIL?)
L4          3 S L3 (P) (ACAC OR (ACETYL(2A)ACETON?) OR DIKETONE OR (BETA(3A)D
L5          3 DUP REM L4 (0 DUPLICATES REMOVED)

=> d que L4
L1          6873 SEA FILE=HCAPLUS ABB=ON (TITANIUM(3A) (ALKOXIDE OR ISOPROPOXIDE
    ))
L2          669 SEA FILE=HCAPLUS ABB=ON L1 (P) (WATER OR AQUEOUS)
L3          93 SEA FILE=HCAPLUS ABB=ON L2 (P) (STABLE OR STABIL?)
L4          3 SEA FILE=HCAPLUS ABB=ON L3 (P) (ACAC OR (ACETYL(2A)ACETON?)
    OR DIKETONE OR (BETA(3A)DIKETONE))

=> d L4 TI AB IBIB 1-3

L4          ANSWER 1 OF 3 HCAPLUS COPYRIGHT 2009 ACS on STN
TI          Exfoliation and restacking route to anatase-layered titanate nanohybrid
    with enhanced photocatalytic activity
AB          A new microporous TiO2-pillared layered titanate has been prepd. by
    hybridizing the exfoliated titanate with the anatase TiO2 nanosol. The
    stable colloidal nano-sheet was obtained by intercalating
    tetrabutylamine into the layered protonic titanate, HxTi2-x/4.box.x/404
    .times. H2O (x = 0.67), with a lepidocrocite-like structure. The
    colloidal suspension of exfoliated titanate sheets was mixed with the
    monodispersed anatase TiO2 nanosol soln. prepd. by the hydrolysis of
    titanium isopropoxide with acetylacetone. The obtained
    nanohybrid was heated at 300 .degree.C for 2 h in order to complete the
    grafting reaction of intercalated anatase TiO2 nanosol on the interlayer
    surface of layered titanate. According to the x-ray diffraction anal. and
    N2 adsorption-desorption isotherms, it was found that the TiO2-pillared
    layered titanate showed a pillar height of .apprx.2 nm, a high surface
    area of .apprx.460 m2/g, and a pore size of .apprx.0.95 nm, indicating the
    formation of a microporous pillar structure. Its photocatalytic activity
    was evaluated by measuring the total vol. of H2 gas evolved during the
    irradsn. of the catalyst suspensions in water. The H2 gas
    evolution was found to increase from the layered titanate (cesium and
    protonic form) to the unsupported TiO2 (acac-TiO2) and the
    TiO2-pillared layered titanate, because the electron and hole

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recombination in the pillared system is thought to be effectively suppressed because of electron transfer between guest and host. A marked enhancement in the activity by ca. 40 times was obtained for TiO₂-pillared layered titanate compared to pristine compds. such as layered titanate and anatase TiO₂ nanosol when Pt (0.3 wt %) was doped on the surface of the sample.

ACCESSION NUMBER: 2002:388038 HCAPLUS
DOCUMENT NUMBER: 137:116835
TITLE: Exfoliation and restacking route to anatase-layered titanate nanohybrid with enhanced photocatalytic activity
AUTHOR(S): Choy, Jin-Ho; Lee, Hyun-Cheol; Jung, Hyun; Kim, Hasuck; Boo, Hankil
CORPORATE SOURCE: National Nanohybrid Materials Laboratory and School of Chemistry and Molecular Engineering, Seoul National University, Seoul, 151-747, S. Korea
SOURCE: Chemistry of Materials (2002), 14(6), 2486-2491
CODEN: CMATEX; ISSN: 0897-4756
PUBLISHER: American Chemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 39 THERE ARE 39 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 2 OF 3 HCAPLUS COPYRIGHT 2009 ACS on STN
TI Effect of solvent on the stability of aqueous TiO₂ sol and characteristics of its thin film
AB The neutral TiO₂ sol was prepd. by a sol-gel method using aq. system. Ethanol was more stable than methanol used as solvent in the prepn. of TiO₂ sol. Using ethanol for the sol prepn., the hydrolysis rate of titanium alkoxide was increased due to decreasing the size of alkoxy group being attached to its central metal than that for the case of using methanol solvent. The ethanol solvent sol with compn. of TTIP:AcAc:EtOH:H₂O:PEG:HCl = 1:1:8:50:0.5:0.15 (molar ratio) was stable for more than 30 days and had no problem for coating. The TiO₂ thin film of about 1.5 .mu.m thickness prepd. from 10 dipping cycles, drying and heat treating at 500.degree.C showed uniform surface and fine microstructure. The transmittance of these TiO₂ thin film was 70% in the visible region.

ACCESSION NUMBER: 2002:7240 HCAPLUS
DOCUMENT NUMBER: 136:203967
TITLE: Effect of solvent on the stability of aqueous TiO₂ sol and characteristics of its thin film
AUTHOR(S): Cho, Kyeong-Sik; Kim, Sung-Do; Kim, Sungjin
CORPORATE SOURCE: Department of Materials Science and Engineering, Kumoh National University of Technology, Kumi, 730-701, S. Korea
SOURCE: Han'guk Seramik Hakhoechi (2001), 38(7), 660-666
CODEN: HSHAF7; ISSN: 1229-7801
PUBLISHER: Korean Ceramic Society
DOCUMENT TYPE: Journal
LANGUAGE: Korean

L4 ANSWER 3 OF 3 HCAPLUS COPYRIGHT 2009 ACS on STN
TI Reactivity of titanium isopropoxide, zirconium propoxide and niobium ethoxide in the system of 2-methoxyethanol, 2,4-pentanedione and water
AB Titanium isopropoxide, zirconium propoxide and niobium ethoxide have been studied in reaction with 2-methoxyethanol (moe), acetylacetone (acac) and water. Structural information has been obtained using FTIR and ¹H, ¹³C FT NMR spectroscopies. The no. of interchanged alkoxy groups increased with

increasing excess of 2-methoxyethanol and reaction temp. The exchange reaction between Nb(OEt)₅ and 2-methoxyethanol was the least effective. Reaction with acetylacetone proved to be very efficient, but diln. with an excess of solvent quenched this reaction. A solid phase of Zr(acac)₄ was formed for more than 2 moles of acac added. The appearance of multiplets in NMR spectra due to CH, CO centers of acac ring in Zr monoacetylacetonate indicated non-sym. bonding of the bidentate acac group and more than one magnetically non-equiv. species. Conversely, a modified Nb(OEt)₄(acac) precursor proved to be monomeric with a sym. bound acac group. During the interchange reaction the symmetry of the Nb(OEt)_x(Omo)_{4-x}(acac) species was reduced. Alkoxy groups were first hydrolyzed followed by very slow removal of the acac ring. Zirconium and niobium modified precursors, resp., were the least and the most susceptible to gelation. Addn. of strong acid further increased the stability of acetylacetonates against condensation.

ACCESSION NUMBER: 1996:32587 HCAPLUS
 DOCUMENT NUMBER: 124:186535
 ORIGINAL REFERENCE NO.: 124:34327a,34330a
 TITLE: Reactivity of titanium isopropoxide, zirconium propoxide and niobium ethoxide in the system of 2-methoxyethanol, 2,4-pentanedione and water
 AUTHOR(S): Sedlar, M.; Sayer, M.
 CORPORATE SOURCE: Department of Physics, Queen's University, Kingston, ON, K7L 3N6, Can.
 SOURCE: Journal of Sol-Gel Science and Technology (1995), 5(1), 27-40
 CODEN: JSGTEC; ISSN: 0928-0707
 PUBLISHER: Kluwer
 DOCUMENT TYPE: Journal
 LANGUAGE: English

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(FILE 'HOME' ENTERED AT 18:53:07 ON 24 JUL 2009)

FILE 'HCAPLUS' ENTERED AT 18:54:04 ON 24 JUL 2009

L1 6873 S (TITANIUM(3A)(ALKOXIDE OR ISOPROPOXIDE))
 L2 669 S L1 (P) (WATER OR AQUEOUS)
 L3 93 S L2 (P) (STABLE OR STABIL?)
 L4 3 S L3 (P) (ACAC OR (ACETYL(2A)ACETON?) OR DIKETONE OR (BETA(3A)D
 L5 3 DUP REM L4 (0 DUPLICATES REMOVED)

=> s L2 (P) (acac or (acetyl(2A)aceton?) or diketone or (beta(3A)diketone))

9081 ACAC
 176931 ACETYL
 312136 ACETON?
 15015 DIKETONE
 1624746 BETA
 15015 DIKETONE

L6 7 L2 (P) (ACAC OR (ACETYL(2A)ACETON?) OR DIKETONE OR (BETA(3A)DIKE
 TONE))

=> due rem L6

DUE IS NOT A RECOGNIZED COMMAND

The previous command name entered was not recognized by the system.
 For a list of commands available to you in the current file, enter
 "HELP COMMANDS" at an arrow prompt (=>).

=> dup rem L6

PROCESSING COMPLETED FOR L6

L7 7 DUP REM L6 (0 DUPLICATES REMOVED)

=> s L7 NOT L5

L8 7 S L7

L9 3 S L5

L10 4 L8 NOT L9

=> d L10 1-4 TI AB IBIB

L10 ANSWER 1 OF 4 HCAPLUS COPYRIGHT 2009 ACS on STN

TI Nanocrystalline titania photocatalyst powder with core shell structure and method of preparing the same

AB A nanocryst. titania photocatalyst powder in which anatase phase and rutile phase are formed in a dual structure of core shell, a micro space is formed between the core and shell, and micro pores are formed inside the core is provided, and a prepn. process of the titania photocatalyst powder is provided. The process comprises first process of prepg. a mixed soln. of Ti(OPr)4-AcAc-PEO and prepg. micro spherical amorphous TiO2-PEO mixed powder by bonding of nano titanium and oxygen from the mixed soln. of Ti(OPr)4-AcAc-PEO; second process of heat treating the amorphous TiO2-PEO mixed powder so that the amorphous TiO2-PEO mixed powder is phase transformed into cryst. titania powder in which anatase phase and rutile phase are formed in a core shell structure; and third process of cooling the titania powder after performing the heat treatment so that the phase transformed core shell structure is sepd., wherein the first process comprises a process (a) of prepg. a PEO soln., a process (b) of prepg. a titanium-isopropoxide soln., a process (c) of prepg. a mixed soln. of the PEO soln. and titanium -isopropoxide soln., a process (d) of first agitating the mixed soln., a process (e) of second agitating the mixt. after adding deionized water and catalyst agent to the first agitated mixed soln., a process (f) of prepg. a mixed soln. in which TiO2-PEO is formed in the sol state by aging the second agitated mixed soln., a process of (g) of filtering the prepd. mixed soln. in which TiO2-PEO is formed in the sol state, and a process (h) of TiO2-PEO mixed powder by drying the filtered mixed soln. in which TiO2-PEO is formed in the sol state.

ACCESSION NUMBER: 2004:981400 HCAPLUS

DOCUMENT NUMBER: 142:228602

TITLE: Nanocrystalline titania photocatalyst powder with core shell structure and method of preparing the same

INVENTOR(S): Hong, Sun Jin; Hwang, Sang Ho; Lee, Jin Gyeong; Lee, Yong Ji; Park, Ha Na; Sung, Hun; Sung, Yun Mo

PATENT ASSIGNEE(S): S. Korea

SOURCE: Repub. Korean Kongkae Taeho Kongbo, No pp. given

CODEN: KRXXA7

DOCUMENT TYPE: Patent

LANGUAGE: Korean

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	-----
KR 2003096171	A	20031224	KR 2003-84454	20031126
PRIORITY APPLN. INFO.:			KR 2003-84454	20031126

L10 ANSWER 2 OF 4 HCAPLUS COPYRIGHT 2009 ACS on STN

TI Photochemical reaction apparatus for the purification of water using titania as a photocatalyst

AB A photochem. reaction app. using UV radiation and thin film photocatalyst made of TiO2 is used to purify water. The app. has a fixing

module, where a photocatalyst carrier coated with TiO₂ is installed outside of an UV lamp. The TiO₂ sol used for the coating is prepd. by mixing isoPr alc., H₂O, acetyl acetone, tetra-Et silicate, and titanium isopropoxide in a wt. ratio of 85: 0.6: 3.5: 0.9: 10 and adjusting the pH of the mixed soln. between 1.5-3 with HNO₃. The TiO₂ powder is obtained by heating the TiO₂ sol at 1-3.degree./min to 100-500.degree., holding at 500.degree. for 1-2 h, and then cooling at 1-3.degree./min. The carrier can be glass, metal, porous glass, or metal beads.

ACCESSION NUMBER: 2004:869419 HCAPLUS
DOCUMENT NUMBER: 142:99774
TITLE: Photochemical reaction apparatus for the purification of water using titania as a photocatalyst
INVENTOR(S): Kim, Hyun Yong; Lee, Hong Geun; Min, Jin Hong; Park, Seong Gyu
PATENT ASSIGNEE(S): E & B Korea, S. Korea
SOURCE: Repub. Korean Kongkae Taeho Kongbo, No pp. given
CODEN: KRXXA7
DOCUMENT TYPE: Patent
LANGUAGE: Korean
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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KR 2001007771	A	20010205	KR 2000-52465	20000905
PRIORITY APPLN. INFO.:			KR 2000-52465	20000905

L10 ANSWER 3 OF 4 HCAPLUS COPYRIGHT 2009 ACS on STN

TI Titania nanocrystal-dispersed patterned thin film and its production method

AB The invention relates to a titania nanocrystal-dispersed thin film patterned on a surface, thus the film formation comprises the steps of: forming the composite metal oxide or hydroxide film from the soln. contg. silicon alkoxide, a hydrolytic titanium compd. and a . beta.-diketone; UV-curing/patterning the composite metal oxide or hydroxide film, removing the UV-unexposed part of the film by etching; and depositing a titania nanocrystal by contacting the film to the water.

ACCESSION NUMBER: 2004:195484 HCAPLUS
DOCUMENT NUMBER: 140:241818
TITLE: Titania nanocrystal-dispersed patterned thin film and its production method
INVENTOR(S): Tatsumisago, Masahiro; Kogure, Toshihiro; Minami, Tsutomu; Tadanaga, Kiyoharu; Matsuda, Atsunori
PATENT ASSIGNEE(S): Japan Science and Technology Corporation, Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 11 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	-----
JP 2004074006	A	20040311	JP 2002-237606	20020816
JP 3960882	B2	20070815		
PRIORITY APPLN. INFO.:			JP 2002-237606	20020816

L10 ANSWER 4 OF 4 HCAPLUS COPYRIGHT 2009 ACS on STN

TI Metal alkoxide hydrolytic polycondensation solution and transparent films

manufactured therefrom

AB A hydrolysis polycondensation product soln. comprises a hydrolysis-polycondensation product of an aluminum alkoxide represented by the formula $Al(OR)_3$ (wherein R represents a substituted or unsubstituted, straight or branched, satd. or unsatd., alkyl group, alkyl-ester group or aryl group, which may optionally contain at least one selected from carbonyl, ether, ester, amido, sulfido, sulfinyl, sulfonyl and imino) which cures within 24 h at 10-40.degree., to thereby form a transparent film. A method for producing an aluminum alkoxide hydrolysis polycondensation product soln. comprises adding an aluminum alkoxide represented by the formula $Al(OR)_3$ in an amt. of about 1 mol part into a mixed soln. of about 0.1 to about 3 mol parts of .beta.-diketone, about 0.5 to about 2 mol parts of an acid and about 10 to about 20 mol parts of an alc.; adding about 30 mol parts or more of water to the soln., per 1 mol part of the aluminum alkoxide; and heating the soln. to 40-70.degree.. A similar method for producing an aluminum alkoxide-titanium alkoxide cohydrolysis polycondensation product soln. is also provided.

ACCESSION NUMBER: 2004:143209 HCAPLUS
DOCUMENT NUMBER: 140:182405
TITLE: Metal alkoxide hydrolytic polycondensation solution and transparent films manufactured therefrom
INVENTOR(S): Sanbayashi, Masayuki; Tanaka, Jun
PATENT ASSIGNEE(S): Showa Denko K. K., Japan
SOURCE: PCT Int. Appl., 45 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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WO 2004014986	A1	20040219	WO 2003-JP10085	20030807
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, KE, KG, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
JP 2004244608	A	20040902	JP 2003-205625	20030804
AU 2003253431	A1	20040225	AU 2003-253431	20030807
CN 1694917	A	20051109	CN 2003-821257	20030807
PRIORITY APPLN. INFO.:			JP 2002-229799	A 20020807
			US 2002-403474P	P 20020815
			JP 2002-367866	A 20021219
			US 2003-437318P	P 20030102
			WO 2003-JP10085	W 20030807
OTHER SOURCE(S):	MARPAT 140:182405			
REFERENCE COUNT:	7	THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT		

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FILE 'HCAPLUS' ENTERED AT 18:54:04 ON 24 JUL 2009

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L1      6873 S (TITANIUM(3A)(ALKOXIDE OR ISOPROPOXIDE))
L2      669 S L1 (P) (WATER OR AQUEOUS)
L3      93 S L2 (P) (STABLE OR STABIL?)
L4      3 S L3 (P) (ACAC OR (ACETYL(2A)ACETON?) OR DIKETONE OR (BETA(3A)D
L5      3 DUP REM L4 (0 DUPLICATES REMOVED)
L6      7 S L2 (P) (ACAC OR (ACETYL(2A)ACETON?) OR DIKETONE OR (BETA(3A)D
L7      7 DUP REM L6 (0 DUPLICATES REMOVED)
L8      7 S L7
L9      3 S L5
L10     4 S L7 NOT L5
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=> d que L4

```
L1      6873 SEA FILE=HCAPLUS ABB=ON (TITANIUM(3A)(ALKOXIDE OR ISOPROPOXIDE
))
L2      669 SEA FILE=HCAPLUS ABB=ON L1 (P) (WATER OR AQUEOUS)
L3      93 SEA FILE=HCAPLUS ABB=ON L2 (P) (STABLE OR STABIL?)
L4      3 SEA FILE=HCAPLUS ABB=ON L3 (P) (ACAC OR (ACETYL(2A)ACETON?)
OR DIKETONE OR (BETA(3A)DIKETONE))
```

=> d que L6

```
L1      6873 SEA FILE=HCAPLUS ABB=ON (TITANIUM(3A)(ALKOXIDE OR ISOPROPOXIDE
))
L2      669 SEA FILE=HCAPLUS ABB=ON L1 (P) (WATER OR AQUEOUS)
L6      7 SEA FILE=HCAPLUS ABB=ON L2 (P) (ACAC OR (ACETYL(2A)ACETON?)
OR DIKETONE OR (BETA(3A)DIKETONE))
```